

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Category cables**

with type designation(s)
MegaLine F6-90 S/F H Marine
KS-02YSCHV 4x2xAWG 23/1 PIMF

Issued to

Leoni Kerpen GmbH
Stolberg (Rhld.) Nordrhein-Westfalen, Germany

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Ethernet cable for horizontal wiring in marine environments.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2018-03-14**

This Certificate is valid until **2023-03-13**.

DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

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Arne Schaarmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Halogen free PE insulated and SHF1 sheathed twisted pairs data transmission cables Cat.7

Conductor: Solid bare copper wire, (AWG 23/1)
Insulation: Cellular- PE
Twisting: 2 cores to the pair
Pair screen: Aluminium-bonded polyester tape
Cable lay up: 4 pairs to the core
Screen: Copper braid, tinned
Sheath: SHF1

Electrical properties: DC resistance: max. 75 Ohm/km
Mutual capacitance: approx. 42 pF/km
Character. impedance: 100 Ω +-5 (at 100MHz)

Frequency MHz	1	10	100	200	250	450	500	600
Attenuation dB/100m	1,9	4,8	16,4	24,5	27,8	36,1	38,2	42,9
NEXT dB	102	102	102	102	102	97	97	92

Application/Limitation

Temperature range: -20°C to +60°C (fixed installation)
Bending radius: 8 x diameter during installation
4 x diameter fixed

In order to achieve a transmission compliant with Category 7 and above, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bundles of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Test report : LEONI dated 07.11.2012 and 07/10.09.2012;
MPA Dresden No. 2012-B-0042, dated 23.01.2012,
No. 2012-B-2720, dated 26.06.2012
Article Number: LKD7KS702740000

Tests carried out

Standard	Release	General description	Limitation
EN 50288-4-1	2013-05	Multi-element metallic cables used in analogue and digital communication and control - Part 4-1: Sectional specification for screened cables characterised up to 600 MHz - Horizontal and building backbone cables	

Job Id: **262.1-025249-1**
Certificate No: **TAE00002RT**

Standard	Release	General description	Limitation
IEC 60332-1-2	2015-07	Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame	
IEC 60332-3-22	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

LEONI MegaLine® F6-90 S/F H Marine * KS-02YSCHV 4x2xAWG 23/1 PIM * IEC 60332-3-22

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE